FOREST INSECT CONDITIONS ON THE

SAWTOOTH NATIONAL FOREST

1966

Following is a summary of forest insect conditions on the Sawtooth National Forest for 1966. Information for this report was compiled from aerial detection surveys and on-the-ground biological evaluations of infested areas.

During the 1966 field season the mountain pine beetle in lodgepole pine, and the spruce budworm defoliating Douglas-fir and true firs, accounted for the major forest insect problems on the forest. Also, epidemic populations of the Douglas-fir beetle are still active on the Sublette Division. In Sawtooth Valley, a weevil has been causing damage to the terminal leaders of sapling and pole size lodgepole pine. A more detailed discussion of these problems follows:

MOUNTAIN PINE BEETLE, Dendroctonus ponderosae Hopk.

For the fourth consecutive year populations of the mountain pine beetle have continued a slow but steady build up throughout lodgepole pine stands on the north and south divisions of the forest. Due to the persistence of the beetles and their tendency to increase, a decision was made to initiate control action, starting in the spring of 1966. At that time, evaluations showed a high overwintering survival rate with broods averaging 120 to 160 per square foot of bark surface. As soon as areas became accessible, infested trees were felled, limbed and treated by mistblower applications of B.H.C. The same type of operation was conducted on the north division of the forest west of Ketchum and in the Big Smoky area. A total of 5,488 trees were treated in this manner on the north and south divisions. An additional 900 infested trees on the northern division were removed by logging.

Fall evaluations showed new attacks adjacent to treated areas on both divisions. The only exception to this was in the Smoky Bar summer home area. Here the beetles had failed to make successful attacks during their summer flights. In treated areas, reinfestation rates were lower than one-to-one. However, residual populations have the biological potential to cause continuing losses. Surveys in most of the treating areas have not been completed, consequently the number of new attacks are not available for comparative purposes. However, one survey was completed in the Fifth Fork of Rock Creek by the time of this report where over 600 trees were treated last year. The recent survey shows slightly over 500 new attacks. Fall evaluations of infested trees showed brood densities of 160 to 180 larvae per square foot. Past experience with the mountain pine beetle in this area have shown that brood counts of this magnitude will result in continued losses.

The number of faders found on the forest this year as recorded by entomologists during aerial surveys are summarized as follows:

South Division (Cassia)

Area	No. Faders
Fifth Fork Rock Creek (Third Fork Rock Creek (Trout Creek (Palmer Creek (Buck Creek (Head of Trapper (	3,000

North Division

Placer Creek	1,200
Castle Creek	2,000
Mid Fork Warm Springs Creek	300
Meadows Creek	200
Cabin Gulch	150
Lower South Fork Warm Springs Creek	100
Red Warrior Creek	250
	4,200

Total estimated No. Faders for north and south divisions - 7,200

In addition to the aforementioned infestation centers, several widely scattered groups of faded lodgepole pine were observed in various locations on D-4 and D-5. Only limited evaluations were made of some of the groups, and brood densities indicated static conditions with little tendency to increase at the present time.

From the entomological standpoint it is recommended that control operations should continue on the Cassia Division and in areas west of Ketchum to reduce tree killing and protect scenic and recreational values.

SPRUCE BUDWORM, Choristoneura fumiferana Clem.

Spruce budworm populations have persisted in the Big Smokey area for the past eleven years in Douglas-fir and true firs. The infestation has fluctuated from a low of 9,000 acres in (1965) to a current high of 110,000 acres. Although defoliation was more extensive this year than last, most of the damage was in the light category.

A breakdown of defoliation categories for the past six years compiled from aerial survey flights follows:

Spruce budworm defoliation by year, intensity, and acres

Year	Light	Medium	Heavy	Total
1961	5,000	3,000	5,000	13,000
1962	4,000	10,000	27,000	41,000
1963	14,720	25,440	20,000	60,160
1964	32,000	21,000	1,000	54,000
1965		9,000		9,000
1966	78,500	15,400	16,100	110,000

This infestation has had a past history of rapid population fluctations that can be attributed to a combination predator-parasite influence and periods of adverse weather. A somewhat dramatic population reduction occurred in the summer of 1960. During the period when adult moths were flying, high intensity hail and rain storms passed through the infested area and literally millions of moths were beaten to death or drowned. The infestation dropped from 40,000 acres in 1960 to 13,000 acres in 1961 with defoliation intensities also being reduced. This is but one example of how adverse weather conditions can influence populations of the budworm.

During the past field season, semi-permanent sampling areas were established throughout spruce budworm infested stands in southern Idaho. New sample locations will be added as needed each year to include as much of a given infestation as is practical. For instance, in 1965 five areas were sampled on the forest. This year ten sampling points were established. It is felt that visitation from year to year at pre-established sampling points will provide more definitive data to the entomologists who in turn can give more meaningful information to the land managers on the trend and course of an infestation.

Data from this year's egg mass sampling plots is presented in the following table:

1966 Spruce Budworm Egg Mass Surveys

Sample Plot Location	Average No. Egg Masses per 1000 square inch of foliage	Expected Defoliation 1967 %	Trend
Little Smokey Creek	5.51	25-50	Static
Lower Bounds Creek	4.08	15-25	Static
Upper Bounds Creek	0.12	<15	Dec.
South Fleck Summit	12.00	51-90	Inc.
North Fleck Summit	11.37	51-90	Inc.
Couch Summit	8.72	25-50	Static
Boardman Creek	3.25	15-25	Inc.
Carrie Creek	0.90	<15	Static
Bridge Creek	2.70	<15	Static
Sidney Butte	4.83	15-25	Inc.

The foregoing egg mass data indicates that budworm populations are expected to persist through the 1967 field season. This year, heaviest defoliation occurred on approximately 35,000 acres of Douglas-fir and true firs near Big Smoky Guard Station. Egg mass data indicates that next year's defoliation of the new growth will range from 25 to 90% in this same general area. This may be a fortunate occurrence as the area has been selected for testing a promising insecticide, Zectran, against larval populations of spruce budworm in 1967.

In retrospect, the insecticide testing laboratory at Berkeley, California needed a typical budworm area in which a comprehensive and conclusive test of Zectran could be made. The foremost criteria for the test was that of having sufficient populations of budworm to work with. Previous to last year (1965) thousands of acres of infested fir were available for test purposes in southern Idaho. Then, a sudden collapse of budworm populations occurred, probably due to adverse climatological and biological factors. The Sawtooth infestation was the least affected area in southern Idaho and therefore was the logical selection for the Zectran tests during 1967.

After selection of the test area it was necessary to accurately delineate the project boundaries. This was accomplished from the air with a helicopter, followed by extensive ground checking. In the course of this survey work it was found that negligible to light populations of the budworm were occuring over several thousand acres. During fixed wing detection flights early this summer, only 30,000 acres of defoliation were recorded. With the helicopter it was possible to discern very light activity, consequently an additional 80,000 gross acres were mapped in. However, because of open slopes, bare ridges, and the scattered nature of stands, an estimated actual area of 60,000 acres of Douglas-fir and true firs will constitute the test area. Heavy defoliation occurred in areas of previous heavy defoliation. The largest increase in defoliation was in the light category. Even though other areas of Idaho experienced sudden reductions in population levels in 1965-1966, the Sawtooth infestation increased in size and defoliation intensity. With the proposal to field test Zectran, it would be highly desirable to spray as much of the area as is possible in 1967.

DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae Hopk.

A highly persistent infestation of Douglas-fir beetle has been epidemic on the Sublette Division since 1958. In 1961, a sale of over 29 MM bd.ft. was proposed to log as quickly as possible, trees that were supporting heavy beetle broods; and remove uninfested, highly susceptible green trees that could sustain the infestation if they were left. Logging has been in progress since 1961 and in FY 1966, 7,295,095 MM bd. ft. of timber were cut and removed. From July 1, 1966 to mid-September 1966, an additional 2,400,000 MM bd. ft. were logged.

After completion of the 1965 aerial detection flights and ground evaluations, it was felt that the infestation had been partially checked. This year's observations show approximately 3,500 to 4,000 faded trees, or slightly over a one-to-one build up ratio. Logging activity has been responsible for reducing the total number of beetles. However, the biological potential of this pest appears to be at about the same level as last year. With this in mind, we expect moderate losses to continue for at least another year.

LODGEPOLE PINE TERMINAL WEEVIL

Damage to terminal leaders of lodgepole pine in reproduction areas was evidenced in portions of the Sawtooth Valley this year. Preliminary examination of the affected trees showed that a weevil (as yet unidentified) was boring into the pith of the main leaders causing them to die. Observations showed that only the terminal leaders are being attacked at the present time. Very little is known about the biology of this insect and whether it is capable of doing extensive damage.

After the first group of affected trees were found further checks were made in surrounding areas. Heaviest terminal feeding was observed in reproduction stands between Alturas and Pettit Lakes. However, some damage was seen in almost all the reproduction stands throughout the Sawtooth Valley and to a lesser degree south of Galena Summit. In addition to reproduction stands, pole sized lodgepole were affected, but damage was less extensive.

In view of the fact that so little is known about this particular weevil, it is virtually impossible to predict what course it will take. For the time being we are committed to "just observing". A follow up examination of the area late this fall showed damage at about the same level as was observed in May. The insect has gone through its complete summer developmental cycle with relatively little increase in the number of affected trees. Lacking further information then, it appears that terminal leader damage to lodgepole pine will continue at the same level through 1967.

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